

REMARKS

In response to the above Office Action, claims 1-13 have been cancelled and replaced by new claims 14-21.

New main claim 14 drawn to an insulating glass unit is a combination of claims 1, 2, 4 and 8. New claims 15-19 dependent from claim 14 correspond to former claims 6, 7, 10, 11 and 12 respectively. New claims 20 and 21, dependent also from claim 8, are drawn to a method for making the insulating glass unit of claim 8. Support for the claims can be found in former claim 13 as well as, for example, on page 47, lines 4-21 of the specification. In view of the Examiner's withdrawal of former method claim 13 (Section 2), claims 20 and 21 have been indicated to be "withdrawn." However, now that they are dependent from claim 8, reconsideration of their status would be appreciated once product claims are considered to be allowable. Thus new claims 14-21 are fully supported and their entry is therefore requested.

Regarding the objection to the paragraph numbers in the specification (Section 3), because this will require extensive amendment of the specification, it is requested that the requirement be held in abeyance pending the allowability of the claims.

In Section 5 in the Office Action, the Examiner rejected claims 1, 2, 4-12 under 35 U.S.C. § 112, second paragraph because it is unclear what is meant by the meaning of "thermoplastic resin" and whether the weight ratio refers to the composition as a whole or to the thermoplastic resin.

As set forth in main claim 14, the thermoplastic resin composition consists essentially of,

- 1) the thermoplastic resin (A);

- 2) the unvulcanized rubber (B);
- 3) the moisture absorbent (C); and
- 4) the at least one additive.

The claim further recites that the weight ratio is between the thermoplastic resin (A) and the unvulcanized rubber (B). Thus it is clear the ratio is referring to “thermoplastic resin (A)” and not to the thermoplastic resin “composition” as a whole.

Similarly, the claim recites that the content of the moisture absorbent (C) is based on a 100 parts by weight of the total of the thermoplastic resin (A) and the unvulcanized rubber (B). Thus it is believed it is clear that it is not based on the thermoplastic resin composition as a whole.

If the Examiner would include the letter “(A)” after the recitation of “thermoplastic resin” as set forth in claim 14, it is believed the meaning of the claimed ratios and amounts would be clear.

Claims 1 and 4-12 were also rejected under § 112, second paragraph for being indefinite for claiming only physical properties rather than chemical or structural features that have such properties. Main claim 14 now includes the subject matter of former claim 2 which sets forth such features, which claim was not included in this rejection, so it is believed the rejection is now moot.

Regarding the range of moisture absorbent (C), it is believed that the claim clearly sets forth that for every 100 parts of the total of thermoplastic resin (A) and unvulcanized rubber (B) (not the thermoplastic resin composition as a whole), there are 10 to 70 parts by weight of the absorbent. It is not seen how this could be written clearer.

Regarding use of the word “kind” in former claim 2, this has not been included in new claim 14.

Finally, the lack of antecedent basis for “glass” in claim 6 has now been avoided by rewriting it as new claim 15 dependent on claim 14.

Withdrawal of the rejections of the claims under § 112, second paragraph is therefore requested.

In the Office Action the Examiner rejected claims 1, 4 and 5 under 35 U.S.C. § 102(b) for being anticipated by U.S. Patent No. 5, 502,112 to Peacock (Section 6). Now that new main claim 14 also includes the subject matter of claims 2 and 8 as well as claims 1 and 4, it is believed the rejection is moot. Its withdrawal as a ground of rejection of the claims is therefore requested.

Claims 1, 2, 4 and 5 were also rejected under 35 U.S.C. § 102(b) for being anticipated by U.S. Patent No. 4,607,074 to Hazelton (Section 7). Now that new main claim 14 also includes the subject matter of claim 8 as well as claims 1, 2 and 4, it is believed the rejection is moot. Its withdrawal as a ground of rejection of the claims is therefore requested.

Claims 1, 2 and 4-12 were also rejected under 35 U.S.C. § 102(b) for being anticipated by Baratuci et al., hereafter Baratuci (Section 8).

The essence of Applicants’ invention as set forth in new main claim 14 is the use of a thermoplastic resin composition for making a spacer between two glass plates of an insulating glass unit that includes, inter alia:

- 1) at least one thermoplastic resin (A) selected from the group consisting of a low density polyethylene (LDPE) and a linear low density polyethylene (LLDPE) having the moisture vapor permeability properties recited in the claim; and
- 2) at least one unvulcanized rubber (B) selected from the group consisting of a halogenated isoolefin/paraalkylstyrene copolymer and an ethylene propylene rubber.

The advantages of using an unvulcanized rubber in which no vulcanizing agent or accelerator is present for forming such a spacer compared to one containing a vulcanized rubber is set forth in detail in the Reply filed May 26, 2009 from page 6, line 12 to page 7, line 4 and page 7, line 13 to page 9, last line. These remarks are incorporated herein by reference. See also page 51, last paragraph of the specification.

Baratuci also relates to an insulating glass unit having as shown in Fig. 7 two glass plates 22 and 23 opposed to each other and a core material 24 (i.e., spacer) arranged therebetween to form an air layer with the glass plates, which glass unit can include an adhesive 26 between the core material and the glass plates.

The Examiner argues that the composition of the core material includes, inter alia, a thermoplastic resin (polyalphaolefin) and an unvulcanized rubber (isobutylene based polymer.) Column 6, lines 65-67 of Baratuci.

The Examiner states on page 8, line 9 of the Office Action that the rubber of Baratuci is “unvulcanized.” However, it is not seen where this is taught in the reference. In fact, the reference appears to teach that the rubber of the core material can be cured. See column 7, lines 47-51 of Baratuci. According to Applicants, the discussion in column 8, lines 6-12 of Baratuci relates to whether or not the adhesive film may be cured or cross-linked and not the core material.

The Examiner argues, however, that because Baratuci does not teach a cross-linking agent or process that would lead to a vulcanized rubber that the reference therefore discloses that it is unvulcanized. However, it is submitted that this is not a valid assumption because Baratuci not only says the core material can be cured, but does not recognize the advantages resulting from the use of an unvulcanized rubber as opposed to a vulcanized one as discussed in further detail below.

In addition, Baratuci does not teach that the polyalphaolefin of the composition of the core material can be a low density polyethylene (LDPE) or a linear low density polyethylene (LLDPE) [i.e., thermoplastic resin (A)]. High or low density polyethylene is described in column 5, lines 50-54 of Baratuci, but this only relates to a “portion” of the core material that “may be a preformed foam.” It is not a component of the composition of the core material. Additionally, this reference provides the description “The remainder of the core … is a compounded …” at column 5, lines 54-, showing that the above substance “high or low density polyethylene” is used only in the above described foam portion of the core material. Foam formation in a portion of the core material will cause the problem of water penetration. In contrast, in claim 14, since the thermoplastic resin composition “consists essentially” of the listed ingredients, it does not include a “foam” material of “low density polyethylene.”

With reference to Table 1 on page 57 and Examples 2-5 and 7-10, LDPE or LLDPE was used as the thermoplastic resin (A) and BR-IPMS or EPDM as “an unvulcanized rubber (B)” to form a spacer for an insulating glass unit. As shown in Table 2 on page 68, the moldability and workability were good and the compositions had “high” retention stability and “very high” productivity.

In contrast, and with reference to Table 1 on page 58 and Comparative Examples 3 and 4 where high density polyethylene (HDPE) was used instead and a “vulcanizing agent” was also present, the compositions had poor moldability (D), “low” retention stability and only “high” or “medium” productivity. See Table 2 on page 69.

In view of these advantages resulting from the use of LDPE or LLDPE in combination with the claimed “unvulcanized rubber” in a composition for forming a spacer for an insulating unit, which advantages are not recognized or appreciated by Baratuci, it is submitted that it cannot be assumed that 1) Baratuci’s rubber is necessarily “unvulcanized” or 2) that LDPE or LLDPE is to be used in combination with it, just because it mentions “an amorphous polyalphaolefin.” The rejection based on Baratuci is that the claims are anticipated by it. However, as noted in M.P.E.P. § 2131, “a claim is anticipated only if each and every element as set forth in the claims is found, either expressly or inherently described, in a single prior art reference.” Emphasis added. Neither LDPE nor LLDPE in a composition that does not include “foam” or an “unvulcanized rubber” of the type claimed is disclosed in Baratuci.

Accordingly, it is not believed that new main claim 14 or claims 15-19 dependent therefrom are anticipated by Baratuci. Its withdrawal as a ground of rejection of the claims under § 102(b) is therefore requested.

The Examiner also rejected claims 1, 2, 6, 8 10 and 11 under § 102(b) for being anticipated by Koizumi. It is believed the Examiner intended to include claims 4 and 5 in the rejection in view of page 11, line 7 of the Office Action.

Even though Koizumi always ends up with a vulcanized rubber in the final thermoplastic elastomer composition disclosed and even though Applicants’ claims use

the transitional phrase “consisting essentially of” to exclude a vulcanized rubber, the Examiner argues that because the specification teaches that a “cross-linking agent” can be present (page 21, paragraph 5, line 2) and specifically zinc oxide (page 31, lines 5-16) that the phrase does not exclude the presence of such an agent and hence a vulcanized rubber from the claim.

This may be true from a reading of only the noted parts of the specification, but if reference is made to the Examples and in particular Comparative Examples 3 and 4 where a vulcanized rubber was present, the composition had “low” retention stability and poor moldability. See Table 2, page 69 and page 71, lines 8-12 of the specification. This is clearly an indication of what the “basic and novel characteristics” of the invention are than just a general reference to the possible use of an additive in the specification and, it is submitted, is sufficient to give the meaning intended to the use of the transitional phrase “consisting essentially of” in the claims, namely, the exclusion of a vulcanized rubber. While the specification may appear to contradict the Examples, Applicants should be able to rely on their Examples to convey to those skilled in the art that they were in possession of the invention now being claimed. See M.P.E.P. § 2163.02. Thus the Examiner’s comment that the claims do not claim that the rubber component is “never vulcanized” (page 16, line 1) is not correct because to say this he is reading into the claim the possible presence of a vulcanizing agent which is not proper for the reasons discussed.

The Examiner also argued that Koizumi discloses a composition that includes an unvulcanized rubber. However, the Examiner admitted in the Office Action of July 16, 2009 (page 6) that in doing so he was relying on the “intermediate product” taught in

Koizumi to anticipate the composition claims, "not the final vulcanized product." However, when the composition is formed into a spacer and is part of an insulating glass unit as claimed, the composition is of the final product. Thus the "intermediate product" of Koizumi is not a proper basis for rejecting the spacer of the present claims which is a final product. Nor is the final product of Koizumi a proper basis either, because there the rubber is vulcanized.

Withdrawal of Koizumi as a ground of rejection of the claims under § 102(b) is therefore requested.

Claims 1, 2 and 4-12 were also rejected under § 103(a) for being obvious over Baratuci in view of Koizumi. However, because 1) Baratuci does not disclose that the rubber used in the spacer is necessarily unvulcanized, 2) the rubber used in the spacer of Koizumi is necessarily vulcanized, and 3) Baratuci does not disclose the use of LDPE or LLDPE in the composition of the spacer together with the fact as discussed above that specific advantages result from the use specifically of a LDPE or LLDPE with an unvulcanized rubber, the invention as claimed cannot be considered obvious over this combination of references. In fact, in view of the specific teachings or lack thereof, the combination of Baratuci and Koizumi would suggest to one skilled in the art that Baratuci's rubber should be vulcanized because there is no teaching that the rubber in Koizumi should remain unvulcanized in the thermoplastic elastomer's composition described therein.

Withdrawal of the rejection of the claims for being obvious under § 103(a) is therefore also requested.

Finally, the Examiner rejected claims 7, 9 and 12 under § 103(a) for being obvious over Koizumi in view of Bowser. These are now claims 16 and 19. However, since they depend from claim 14, it is not believed they are obvious for the same reasons claim 14 is not anticipated or obvious over Koizumi.

It is believed claims 14-21 are now in condition for allowance. If so, it would be appreciated if the Examiner would consider rejoicing method dependent claims 20 and 21.

In view of the foregoing amendments and remarks, Applicants respectfully request reconsideration and reexamination of this application and the timely allowance of the pending claims.

Please grant any extensions of time required to enter this response and charge any additional required fees to Deposit Account 06-0916.

Respectfully submitted,

FINNEGAN, HENDERSON, FARABOW,
GARRETT & DUNNER, L.L.P.

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By: 
Arthur S. Garrett
Reg. No. 20,338
(202) 408-4091